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Emergent Complexity in Speech Acquisition: Applications to Evolution of the Speech Capacity.

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The acquisition of phonological complexity in young children enables a short-time scale view of the long-time scale evolutionary process that has concluded in contemporary human language. The classic Chomskian perspective proposes that linguistic form originates in the human mind and is available to the infant prior to use, making the descent-with-modification approach untenable. In contrast, emergence proposals (e. g. Davis & Bedore, in preparation, Tomasello, 2003) understand the acquisition of human language to be an instance of emergent complexity. In particular, phonological complexity is seen as arising from the interaction of child-intrinsic capacities supported by adult input to serve adaptive functions within social interactions. Within an emergence perspective, the Frame-Content hypothesis (F/C; MacNeilage & Davis, 1990) suggests that biomechanical constraints underlie observable output patterns in infant babbling and are retained in languages. These constraints were also found in a putative corpora of early hominid speakers (MacNeilage & Davis, 2000). We will present results on development of pitch patterns in tone and intonational languages to extend the F/C principles to consider emergence of the prosodic component of phonological form.

Oct. 17 (Sat.) 14:30-15:00

Dynamic Evolution of the Human Knowledge System in a Textbook

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The human knowledge system in a textbook is a dynamically evolving complex system. A large number of new concepts are presented systematically to maximize the cooperative learning effect through mutual association. In this study, we analyze the dynamic organization of a textbook network, where a node corresponds to a physics terminology and a link between two nodes implies the co-occurrence of two terms in a sentence. We show that the growth of the scale